

about S. lat. $20^{\circ} 46' 6''$, E. long. $117^{\circ} 7' 55''$. The courses of the following rivers were correctly traversed and mapped:—De Grey River, 100 miles; Turner, 25 miles; Yule, 50 miles; Sherlock, 50 miles; Fortescue and tributaries, 300 miles; Robe, 50 miles; Cane, 70 miles; Ashburton and tributaries, 150 miles; making a total of 795 miles. The heights of mountains have not yet been calculated, but a triangulation was made of the country between the De Grey and Ashburton Rivers, covering an area of 30,000 square miles. Maps of the districts above-mentioned are in preparation, but are not yet completed. The report of the work performed during the current half year will, no doubt, contain some interesting information, as a party, under the command of Mr. Alex. Forrest, started in January last to undertake the exploration of the previously unexamined tract of country in the north-west lying between the De Grey and Victoria Rivers.

BARON VON MÜLLER, in a letter to Petermann's *Mittheilungen*, states that Mr. Tietkens, who accompanied Giles on his two last journeys, has left Adelaide for Bellata at the head of a camel expedition fitted out by Mr. Elder for exploration along the region lying inwards from the great Australian Bight. Mr. Tietkens informed us when he was in this country that he was confident that long stretches of fine pasture-land would be found at various parts of this region, and one of his objects is apparently to find these. Baron von Müller speaks highly of Mr. Tietkens's qualifications as an explorer and surveyor, and expects that in the course of the next few years he will do much to add to our knowledge of the geography of the Australian interior.

M. SOLEILLET, the French explorer of North Africa, has arrived at Marseilles from St. Louis, in Senegal. He has been received by the Geographical Society of that city, and will deliver a lecture on the necessity of opening the way between Senegal and Algeria, *via* Timbucktoo. It is said that he will, at the suggestion of Akhbor, be called to Algiers by the Governor-General before going to Lyons and Paris, where he will deliver lectures on the same subject. In this connection we may state that an interesting ceremony will take place in a few days. The inhabitants of a small country place in the Eure department will remove to another site the grave of René Caillet, the celebrated Timbucktoo explorer, who died in 1838, and was the first laureate of the French Geographical Society. The Society will bear the expenses of exhumation, and send delegates to witness it. One of them will be M. Soleillet.

IN No. 20 of *Globus* of this year is a short article of some interest showing the physical and moral changes in the population of Siberia by the mixture of Russian colonists with the native races.

WE take the following from the *Gardeners' Chronicle*:—Mr. Goldie, the naturalist, who has passed the last eighteen months in New Guinea in search of plants for Mr. B. S. Williams, of Holloway, has, the *Brisbane Courier* states, collected an immense number of animals, birds, and insects, besides valuable botanical specimens, and believes that a large number of these are entirely unknown. He claims to have found an entirely new species of kangaroo. He has brought with him a native from the coast tribes, a good-looking lad of indistinct Malay origin, whose long curly hair, tied round with a string, is worn standing straight up. The natives of the inland tribes Mr. Goldie states to be entirely different from those on the coast in both appearance and customs, but all, he says, are friendly and good-natured, and not given to the deeds of ferocity lately detailed by us on the authority of the residents at a *bêche-de-mer* station. Mr. Goldie was of the party that made its way to the coast, crossing about twenty flooded rivers, and losing horses and baggage, and states that although they crossed some high ranges they never

reached the dividing range, on the other side of which, the general belief amongst the party was, that payable gold would be found. The natives in the interior are, it appears, so awed at the sight of a white man as to obviate any risk of molestation. The custom of a tribe with whom Mr. Goldie's party came in contact, suggested to them the probable origin of the rumours that have been always current of a race of tailed men in some remote corner of the globe. These natives wear artificial tails of such cunning construction as to entirely mislead a casual observer. They are entirely naked, except for the caudal ornament, which is a plait of grass fastened round their loins by a fine string, and depending behind to about half-way down their legs. Possibly the missing link that has so baffled Darwin has only lately become extinct in New Guinea, and these descendants, ashamed of their degeneracy, keep up the tradition of a noble ancestry by simulating their distinguishing characteristic.

THE Austrian *Monatschrift für den Orient* of May contains an article of much practical and some ethnological value on the Nations of the Turkish Empire as factors in the National Economy; he reviews the condition of the various industries, and the character of the various ethnical elements of the Turkish dominions. Herr A. von Wassberg contributes a paper on the Migrations of the Inhabitants of the Ionian Islands, while Herr Schick continues his elaborate papers on Agriculture in Palestine.

THE May number of Petermann's *Mittheilungen* gives the chief place to a long and careful article by M. Lindeman on the North Coast of Siberia between the Mouths of the Lena and Behring Straits. Herr Lindeman traces the history of exploration in the region from 1630 to the present time, and follows this with a description of the coasts and islands. The article is accompanied by an excellent map in two sheets. Dr. Emin Bey, Governor of the Egyptian Equatorial Provinces, contributes an interesting Journal of a Journey from Mruli to the chief town of Unyoro, abounding with valuable notices on the country and people.

THE March number of the *Bulletin* of the Paris Geographical Society contains, as its first article, the first part of a learned paper by M. de Saulcy on the cities of Upper Louten, the Syria of the Ancient Egyptians. Other papers are on the frontiers of Russia in Central Asia, by M. de Ujfalvy; explorations of the Cunene, by M. Nogueira; and the dried-up rivers of the Dobruja, by Herr F. Kanitz.

NOTES

THE University of Cambridge proposes to confer the honorary degree of LL.D. upon the following, among others:—Mr. Justice Grove, Mr. W. Spottiswoode, President of the Royal Society, Mr. Henry J. S. Smith, Savilian Professor of Geometry, Oxford, Prof. Huxley, Mr. H. C. Sorby, F.R.S. The Rede lecture will be delivered in the Cambridge Senate-house at 2.30 on Wednesday, June 11. The lecturer, the Rev. W. H. Dallinger, has chosen the following subject:—"The Origin of Life as illustrated by the Life Histories of the Least and Lowest Organisms in Nature."

THE Forty-Ninth Annual Meeting of the British Association will commence at Sheffield on Wednesday, August 20, 1879. The President Elect is Prof. G. J. Allman, LL.D., F.R.S., Prof. L.S. Vice-presidents Elect—His Grace the Duke of Devonshire, K.G., F.R.S., the Right Hon. the Earl Fitzwilliam, K.G., the Right Hon. the Earl of Wharncliffe, W. H. Brittain (Master Cutler), Prof. T. H. Huxley, Sec. R.S., Prof. W. Odling, F.R.S. General Secretaries—Capt. Douglas Galton, C.B., F.R.S., Philip Lutley Sclater, Ph.D., F.R.S. Assistant

Secretary—J. E. H. Gordon, B.A. General Treasurer—Prof. A. W. Williamson, Ph.D., F.R.S. Local Secretaries—H. Clifton Sorby, F.R.S., J. F. Moss. Local Treasurer—Henry Stephenson. The following are the sections and their presidents:—A.—Mathematical and Physical Science.—President: George Johnstone Stoney, F.R.S. B.—Chemical Science.—President: Prof. James Dewar, F.R.S. C.—Geology.—President: Prof. P. Martin Duncan, F.R.S. D.—Biology.—President: Prof. St. George Mivart, F.R.S. E.—Geography.—President: Clements R. Markham, C.B., F.R.S. F.—Economic Science and Statistics.—President: G. Shaw Lefevre, M.P., Pres. S.S. G.—Mechanical Science.—President: J. Robinson, Pres. Inst. Mech. Eng. This list of sectional officers will be completed and will be submitted to the General Committee on Wednesday, August 20. The Reception Room will be opened on Monday, August 18, at 1 P.M., and on the following days at 8 A.M., for the issue of tickets to Members, Associates, and ladies, and for supplying lists and prices of lodgings, and other information, to strangers on their arrival. No tickets will be issued after 6 P.M. Tickets for the meeting may also be obtained from August 1 until August 6, on application to the General Treasurer, Prof. A. W. Williamson, British Association, University College, London, W.C. The first General Meeting will be held on Wednesday, August 20, at 8 P.M., when Dr. William Spottiswoode, Pres. R.S., will resign the chair, and Prof. G. J. Allman, F.R.S., President Elect, will assume the Presidency, and deliver an address. On Thursday evening, August 21, at 8 P.M., a *soirée*; on Friday evening, August 22, at 8.30 P.M., a discourse by William Crookes, F.R.S., on Radiant Matter; on Monday evening, August 25, at 8.30 P.M., a discourse by the Rev. W. H. Dallinger, on the Life Histories of the Minutest Organic Forms, and their Bearing on the Doctrine of the Origin of Species; on Tuesday evening, August 26, at 8 P.M., a *soirée*; on Wednesday, August 27, the concluding General Meeting will be held at 2.30 P.M. On Saturday evening, August 23, W. E. Ayrton, Esq., will deliver a lecture to the Operative Classes, on Electricity as a Motive Power. Tickets can be purchased of the local Secretaries. No report, paper, or abstract can be inserted in the Report of the Association unless it is in the Assistant Secretary's hands before the conclusion of the Meeting. A room will be provided for the reception of apparatus and specimens illustrative of papers communicated to the Sections. Excursions to places of interest in the neighbourhood of Sheffield will be made on Thursday, August 28.

WE regret to hear of the decease of M. Edouard Pictet, of Geneva, at the early age of forty-four. He was the son of Prof. F. J. Pictet, of the same city, formerly a writer on neuropterous insects, latterly a palaeontologist, who died about seven years ago. M. E. Pictet inherited his father's scientific tastes, and in 1865 published a "Synopsis des Névroptères d'Espagne," based upon a journey made in that country a few years previously. Latterly he had been much occupied in investigating the physical conditions of the Lake of Geneva, in company with Forel and others of his compatriots; and his official duties, municipal and otherwise, took up much of his time. He visited London at the time when the Loan Exhibition of Scientific Instruments was on view at South Kensington. The family Pictet has included amongst its members several illustrious scientific men, and is one of which Switzerland is justly proud. M. Raoul Pictet, the celebrated investigator of the liquefaction of gases, is a cousin of the subject of this note, and M. H. de Saussure also belongs to a collateral branch of the same family.

THE death is announced of Mr. Thomas Wills, F.C.S., who has acted as secretary to the Chemical Section of the Society of Arts since it was first founded in 1874. Mr. Wills was born in 1850, in Devonshire; he was educated at University College

School and at King's College. In the early part of 1868 he became an assistant to Dr. Odling at St. Bartholomew's Hospital, and in the latter part of that year, on Dr. Odling being elected to the Fullerian Professorship at the Royal Institution, Mr. Wills was appointed his official assistant. In 1873 he resigned this post to accept the position of Demonstrator in Chemistry at the Royal Naval College. The subject to which Mr. Wills specially devoted himself was the application of chemistry to the manufacture of gas, and on questions connected with this subject he was rapidly becoming an authority. He was a constant contributor to the *Transactions* of the Chemical and other societies. For several years he acted as secretary to Section B (Chemistry) of the British Association, and he was a member of the Association Committee for ascertaining the best methods of improving the illuminating power of coal-gas. His most recent piece of work was in connection with the subject of electric lighting. Dr. Tyndall, in giving evidence upon the electric light before a Committee of the House of Commons, referred to Mr. Wills as having discovered that oxides of nitrogen were given off by the voltaic arc, thus rendering the light to that extent injurious.

IN the Paris Academy, Dr. Oppolzer has been elected a Corresponding Member in the Astronomical Section in place of the late Prof. Argelander, and M. Alphonse Favre in place of the late Prof. Leymerie in the Section of Mineralogy.

THE professors of the Museum of Paris have presented two candidates for filling the place vacated by the death of Claude Bernard, who was professor of general physiology in the establishment. The first candidate is M. Boubez, of the Institute, and the second M. Moreau.

A GENERAL MEETING of the Mineralogical Society of Great Britain and Ireland will be held at the Meteorological Office, 116, Victoria Street, on Tuesday, June 3, at 8 P.M., when the following papers will be read:—On abriachanite, a new Scottish mineral, by Prof. M. F. Heddle and D. W. H. Aitken; on haughtonite, a new mica, by Prof. M. F. Heddle; on christophite from St. Agnes, Cornwall, by J. H. Collins, F.G.S.; minerals from Japan, by John Milne, LL.D., and T. Davies, F.G.S.; additional note on penwithite, by J. H. Collins, F.G.S. The chair will be taken by Prof. T. G. Bonney, M.A. Other communications intended to be read at this meeting should be sent to J. H. Collins, secretary, at the Scientific Club, 4, Savile Row, London, W., not later than Saturday, May 31.

THE first public act passed by the U.S. Congress during the present session, was one making an appropriation of 200,000 dollars for the construction, under the direction of the Secretary of the Treasury, for the National Board of Health of a vessel provided with suitable refrigerating apparatus, for the purpose of determining the possibility of destroying the yellow fever infection by intense cold. The act as first introduced had special reference to the apparatus of Prof. Gamgee, but as passed it is within the power of the Secretary to select any device that will, in the opinion of the National Board of Health, best answer its purpose.

PROF. DUGES, of Mexico, in a recent letter to the Smithsonian Institution, speaking of the enormous numbers of the common cow-bird, or *Molothrus pecoris*, in his neighbourhood, refers to a certain flight supposed to have been about 12,000 yards in length, six yards wide, and probably over a yard deep. He estimates the number contained in it to be from 9,000,000 to 10,000,000. A flock of 1,000 or 2,000 of these birds is very common, generally mixed with the *Xanthornus icterocephalus*, and to some extent with the red-winged blackbird.

WE learn that Dr. Edouard Bornet, of Paris, eminent for his researches on the structure and reproduction of algae, and author

of other works on that order, and Prof. Heinrich Gustav Reichenbach, fils, Director of the Botanic Gardens, Hamburg, alike distinguished for his special knowledge of, and publications on, the Orchidaceæ, have been elected Foreign Members of the Linnean Society.

OF eleven female candidates who presented themselves for the first examination for the degrees of London University, six were placed in the division of honours, four were declared to be entitled to exhibitions, and one was second in the whole list of candidates. There were only two failures.

DR. SWAN M. BURNETT, of Washington, has recently made some examinations for the purpose of ascertaining whether the negro in the United States is affected with colour-blindness to the same degree as the white race. He has examined 3,050 coloured children, from six to eighteen years of age, in the public schools of the district of Columbia, of whom 1,359 were males, and 1,691 females. Of these, twenty-two boys were colour-blind (or 1·6 per cent.), and two girls (or 0·11 per cent.). The percentage of colour-blindness among the whites in an aggregate of about 40,000 examinations is 3 per cent. for males, and 0·26 for females. The negro appears, therefore, to be less liable to this defect than the white race. The examinations were made in strict accordance with the plan proposed by Prof. Holmgren, of Upsala, Sweden, and used so extensively in making similar examinations in Europe.

A NUMBER of Jablochhoff candles have been employed by the French government, for illuminating, by night, an exhibition held at the Ecole des Beaux Arts, for the benefit of schools. The success is so great, that it has been proposed by M. Turquet, Director of Fine Arts, to open by night the exhibition of Pictures, held now at the Palais de l'Industrie. It is stated that not less than 250 candles will be lighted on this occasion, which will require an engine of more than 300 horse-power. But the expense, although considerable, will be nothing in comparison with the receipts expected. The arrangements will be made during the temporary closing at the end of May, and the electric light be put in operation during the month of June. It is likely that the arrangements will be utilised by the Exhibition of Arts applied to Science, which will be held from July to November.

THE select committee to investigate into the explosion on board Her Majesty's armour-plated turret-ship *Thunderer* propose to make their experiments in the most public manner, in order fully to establish the stability of the guns constructed on the Woolwich system under all the conditions of the service, and the liability of any gun to be destroyed by unfair means. The burst gun has been taken into the inspection department for examination, and the sister 38-ton gun will be taken to the proof butts in the marshes to be fired.

THE June *Scribner* will contain the first of a series of articles on "Edison and his Inventions," by Mr. Edwin M. Fox. The opening paper will be devoted to the electro-motograph and its applications. The six-years' growth of this remarkable invention will be described by Mr. Fox with much incidental light on the inventor's methods of work.

THE Colonies and India furnishes some interesting particulars respecting the so-called "vegetable ivory," which is now so much used as a substitute for ivory. The vegetable ivory nut is the produce of a species of palm found wild in South America and Africa. Inside the hard shell is the white kernel, which being softer than ivory and easily carved, as well as readily dyed, and being less brittle than bone, is largely used in making buttons, &c. The unripe fruit consists of a green shell, containing a watery fluid, which, as the nut ripens, gradually thickens until it becomes a pulpy mass, and eventually hardens into solid matter. The water, though bitter to the taste, is wholesome, and often renders invaluable service to travellers, who cannot

otherwise obtain water to drink. The tree (*Phytelephas macrocarpa*) on which the fruit grows is unlike an ordinary palm, having little or no stem and drooping downwards, especially when the weak branches are overweighted by the six or seven bunches of nuts, each containing six or seven seeds, inclosed in thick heavy shells and outer sheath, and weighing altogether from 20 to 24 lbs.

A RECENT valuable memoir by Prof. Stefan to the Vienna Academy treats of the relation between radiation of heat and temperature. In the first part he discusses Dulong and Petit's experiments, from which the conclusion was drawn that the amount of heat radiated from a body increases in a geometrical progression, when its temperature increases in an arithmetical. Prof. Stefan points out that the observations of these physicists may be calculated with great approximation by another very simple formula, according to which the amount of heat radiated from a body is proportional to the fourth power of its absolute temperature. It is shown that while the law of geometrical progression corresponds to Dulong and Petit's numbers better than that of the fourth powers, these numbers (because of defects in experiment) are not suited for rigorous proof of the law as to heat radiation. Further, it is shown that the formula of the fourth powers agrees with the observations of Provostaye and Desains much better than that of Dulong and Petit. In the second part of the memoir, cooling experiments are utilised for determination of heat-radiation in absolute measure. In the third it is shown that the formula of the fourth powers agrees fairly well with Draper's experiments on heat radiation of a glowing platinum wire, and Ericson's on that of a glowing block of iron. The fourth part contains some remarks on the sun's temperature. From the intensity of solar radiation as determined by Pouillet, the emissive power of the sun being considered = 1, we obtain, according to the formula of the fourth powers, the sun's temperature = 5580°. Nearly the same number comes by this formula from Soret's comparative determinations of the radiation of the sun and that of a glowing disk of zirconium.

A NEW grass, *Reana luxurians*, has been imported into Ceylon from Java, and is stated to be doing well, having attained a height of 8 feet in three months. It is said to contain a large amount of saccharine matter, and cattle and horses eat it freely.

EXTRAORDINARY finds of gold have lately occurred in the gold-fields of Dutch and French Guiana and are causing great excitement.

A RICH deposit of lead and silver has just been discovered near the Thames River, New Zealand. The ore is reported to contain 50 per cent. of lead, with about two pounds worth of silver, and 9 dwt. 13 grs. of gold per ton.

ACCORDING to the Japan papers, a singular innovation has lately taken place in an ancient branch of the trade of the country. Mixadzu, a town in the province of Tanbano-kuni, has always been famous for the manufacture of crape, the principal industry in the province. Hitherto, however, the crape has been manufactured from Japanese silk, but it has recently been discovered that the kind of silk required can be imported from Corea of better quality and much cheaper than it can be procured at home. A number of Japanese merchants have, therefore, formed themselves into a company with the object of manufacturing crape from Corean silk, and have already despatched one of their number to Corea to make the necessary arrangements.

ON Tuesday last week an enormous avalanche descending from the Jungfrau swept through the valley of Stufenstein, carried away a whole forest, and created the utmost consternation in the neighbourhood. So far as is known no lives were lost.

THERE has been a slight eruption of Vesuvius for some days.

A very distinct Fata Morgana was observed above the village of Zhor, near Kozlau in Bohemia, on the 2nd inst.

M. JULES FERRY, the French Minister for Public Instruction publishes a report on the re-establishment of the Museum of Pedagogy, which was created by M. Jules Simon at the Ministry of Public Instruction, and described in NATURE at the time. This report shows that the original idea of such a collection must be attributed to M. Jullien of Paris, one of the best pupils of the celebrated Pestalozzi, who established it in 1817. The direction of the new museum will be given to a general inspector of primary instruction specially appointed for the purpose. This museum will be also a central library for primary education in France.

We have received two numbers (February and March) of the *College Journal*, issued in connection with the Georgetown (R.C.) College, U.S. The latter number contains an article resuming some of the more recent conclusions with regard to sun-spots.

We have on our table the following books:—"Description of Vertebrate Remains," Prof. Joseph Leidy (Collins, Philadelphia); "Characeæ Americanæ," part 1 (Timothy F. Allen, New York); "Sport in British Burmah, Assam, and the Cassyah and Jyntiah Hills," Lieut.-Col. Pollok (Chapman and Hall); "Obituary Notices of Astronomers," Edwin Dunkin (Williams and Norgate); "On the Nature of Life," Ralph Richardson (H. K. Lewis); "The Gault," F. G. Hilton Price (Taylor and Francis); "Ausgestrahlte Licht," Edw. L. Nichols (E. V. Huth, Göttingen); "The Students' Text-Book of Electricity," Henry M. Noad (Crosby Lockwood); "Atlas of Histology," part 3, E. Klein and E. N. Smith (Smith, Elder); "Organic Chemistry," Hugh Clements (Blackie and Sons); "Evolutions Old and New," S. Butler (Hardwicke and Bogue); "Treatise on Natural Philosophy," vol. i. part 1, Thomson and Tait (Cambridge University Press); "Mechanics," R. S. Ball (Longmans); "Health and Occupation," B. W. Richardson (S.P.C.K.); "Electric Lighting," J. N. Shoolbred (Hardwicke and Bogue); "Hydro-Incubation," Thos. Christy (Christy and Co.); "Principles of the Algebra of Logic," Alex. Macfarlane (Douglas); "Geological Map of Northumberland," G. A. Lebour (Andrew Reid); "The Ibis" (General Index 1859-76), Ed. O. Salvin (Van Voorst); "Middleton's Impeachment of Modern Astronomy" (Judd and Co.); "Hints on the Pronunciation of the French Language," L. J. V. Gerhard (Hachette and Co.); "Analytical Chemistry," Dr. John Muter (Wm. Baxter); "Pharmaceutical Chemistry," Dr. John Muter (Wm. Baxter); "Manchester Science Lectures for the People, 1877, 1878, 1879" (John Heywood); "Australasia," A. R. Wallace (E. Stanford).

The additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus erythreus*) from India, presented by Mr. H. Winsor; a Vulpine Phalanger (*Phalangista vulpina*) from Australia, presented by Mr. A. Elder; a Ring-necked Parrakeet (*Psittacula torquata*) from India, presented by Mr. F. S. Prince; a Herring Gull (*Larus argentatus*), European, presented by Mr. C. H. de Loecker; a Rough Terrapin (*Clemmys punctularia*) from Trinidad, presented by Surgeon-Major C. J. Weir; a Puma (*Felis concolor*) from America, purchased; two Squirrel Monkeys (*Saimiris sciurea*) from Guiana, two Plantain Squirrels (*Sciurus plantani*) from Java, a blue Jay (*Cyanocitta cristata*) from North America, an Ariel Toucan (*Ramphastos ariel*) from Brazil, a Scaler's Curassow (*Crax scalaris*) from South America, deposited; a Zebu (*Bos indicus*), two Geoffroy's Doves (*Peristera geoffroyi*), a Yellow-legged Herring Gull (*Larus leucocephalus*), bred in the Gardens.

ON THE INFLUENCE OF PRESSURE UPON THE SPECTRA OF GASES AND VAPOURS

HERR G. CIAMICIAN has recently communicated to the Vienna Academy the results of a series of interesting experiments made with a view of investigating the influence of pressure upon the spectra of gases and vapours. From the somewhat lengthy report we gather the following data, which may prove acceptable to those of our readers who are actively engaged in spectroscopic research. The spectra of the three halogens, chlorine, bromine, and iodine, show on the whole the same peculiarities when the pressure is increased. The bright lines become diffused, sometimes a little broader, without, however, changing into bands. Besides this, a continuous illuminated background appears, which increases in brightness with the pressure, and which often overpowers the lines. This is particularly the case with iodine, where, eventually, nothing but a continuous spectrum is seen; while with chlorine and bromine certain lines yet remain brighter than the continuous light. The behaviour of certain lines in the red part of the spectra of chlorine and bromine is remarkable, as they retain their original sharpness and fineness under any pressure.

The spectrum of sulphur does not change at all under increased pressure, the lines retain their full sharpness, and a continuous bright background appears only at the red end of the spectrum. In the case of phosphorus and arsenic there is no reaction at all, as here even the continuous background does not appear. Herr Ciamician thinks that it has been overlooked hitherto that arsenic under a moderate pressure, and without a Leyden jar being inserted into the electric current, gives a spectrum of the first order, viz., a nearly continuous one, which, when the density becomes greater and the Leyden jar is inserted, disappears, and is replaced by a line spectrum.

Metals behave very differently to the non-metals just mentioned; here a real band-like extension of the spectral lines takes place, while the continuous light remains subdued. In the mercury spectrum the enlargement of the green and violet lines are specially noteworthy. In the sodium spectrum Herr Ciamician could observe the enlargement, which is very considerable, only with the reversed, i.e., dark D line, as he could not observe the spectrum emitted in any other way than through a layer of sodium vapour. Under high pressure sodium gives a continuous background in the immediate neighbourhood of the D line, and upon this the reversed D line appears. At first it is seen as a double line, but soon afterwards the two lines flow into one in consequence of the enlargement; the dark band thus formed becomes wider and wider, until it finally covers the whole background which appeared in continuous light.

SCIENTIFIC SERIALS

THE Revue Internationale des Sciences (April, 1879) contains the following papers:—On symbiosis, by Prof. de Bary.—On the physical and intellectual evolution of woman among the different races, by M. Zaborowski.—On the chromatic function of the octopus, by Dr. L. Frédéricq.—On the source of muscular power, by A. Flint.—On the constitution of the blood plasma, by Dr. L. Frédéricq.—On the nature of lichens, by Dr. J. Müller.—On the entozoa of insects, by Osman Galeb.

THE Verhandlungen der naturforschenden Gesellschaft zu Freiburg in Baden (vol. vii. part 3) contains the following papers:—On a generalisation of Jacobi's reversal problem of Abel's integral, by F. Lindemann.—On the determination of the coefficient of elasticity through the bending of short rods, by K. R. Koch.—Microscopical observations on the growth and melting away of alum crystals in solutions of isomorphous substances, by F. Klocke.—On an automatic water and air-pump, by L. von Babo.—New discoveries in the Freiburg flora, by J. Schill.—On some minor actions of wind, by F. C. Henrici.

THE Archives des Sciences physiques et naturelles (April, 1879) contains the following papers:—Remarks on the geological review of Switzerland for 1878, by Ernst Favre.—On the *seiche* occasioned by the cyclone of February 20 last, by Prof. Ph. Plantamour.—On the hurricane of February 20, by F. A. Forel.—On the presence of tannin in vegetable cells, by J. B. Schnetzler.—On the meteorology of the Presidency of Bombay, by Ch. Chambers.—Researches on electricity, by Gaston Planté.—On the compounds derived from oxypropylbenzoic acid, by R.